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$C_{60}H_{62}O_4$. By oxidation of this substance by means of lime and potash, the acid $C_{60}H_{60}O$, melissic acid, was obtained; and by the action of chlorine, a body analogous to chloral, a substance, that is, of the aldehyde series, but with a substitution of between fourteen and fifteen equivalents of chlorine for hydrogen. In its conversion into this substance the alcohol loses two equivalents of hydrogen, without substitution. The author also investigated the products of the distillation of myricine. From these he procured likewise palmitic acid and a solid hydrocarbon, which, rectified over potassium, had a melting-point of 62° , and contained, as shown by analysis, carbon and hydrogen in *equal* equivalents. The analogy of the mode of formation of this substance to cerotine from Chinese wax shows that it is the hydrocarbon, melene, $C_{60}H_{60}$. By repeated crystallization from ether a substance was obtained from the impure myricine, of a crystalline character, melting at 72° ; the analysis of which agrees with the formula $C_{92}H_{92}O_4$, which explains the reactions of the substance.

The general conclusion from this investigation is, that waxes are a class of bodies which, chemically speaking, stand in the same relation to fat as fatty bodies do to the alcohol and acetic acid of vinous fermentation; all which bodies are members of one chemical series, possess an analogous chemical character, and are susceptible of analogous transformations.

Robert Gordon Latham, M.D., was admitted into the Society.

"An account of Astronomical Observations proposed to be made in South America." By S. M. Gilliss, in an extract of a letter to Lieut.-Col. Sabine, R.A., For. Sec. R.S. Communicated by Lieut.-Col. Sabine.

DEAR SIR,

Washington, October 25, 1848.

During the month of April last I sent to you, through the Royal Society, a printed report from one of the naval committees in congress, recommending a grant of funds for the purpose of sending an astronomical expedition to the most available point in South America, to make observations which should have for their object the improvement or verification of the solar parallax. The basis of this report was a correspondence between Dr. Gerling of Marburg, other astronomers, and myself, that had been presented for consideration by the Secretary of the Navy, and, in accordance with the views of the Philosophical Society and of the Academy of Arts and Sciences, had been laid before congress for their decision.

Conformably with the recommendation of the committee, an appropriation was made, and the Honourable Secretary of the Navy directed to employ it in making the observations requested by the two societies just named. The command of the party has been assigned to me, and a plan of operations submitted to the societies having received their sanction, has been approved by the Secretary. This is briefly as follows:—

To embark the instruments and their assistants by the 1st of June

next for Valparaiso, for which place I shall leave New York per steamer, *vid* Chagres and Panama, at the same time. As the voyage by this route may be readily made in thirty-five days, I shall be able to select a suitable station and make all necessary arrangements prior to the arrival of the instruments; but it is very probable that Santiago or Talca will be chosen for our operations, and from the solicitude expressed by the resident Chilian Chargé d'Affaires, the preponderance is on the side of Santiago. Moreover, it is thought that if Santiago is chosen and we remain nearly four years, as contemplated, the Chilian government will be induced to establish a permanent observatory there.

The observations I propose to make are,—Mars on the meridian and extra-meridian, during the oppositions of 1849 and 1852; and Venus under analogous conditions at the inferior conjunctions and stationary terms of 1850 and 1852. These observations will be differential, and (as the grant of congress implies) are the paramount objects of the expedition; but as they will occupy only a portion of our time, the following series have also been decided on:—

1st. With a view to improvement in the constant of lunar parallax, Burckhardt's semidiameter, and the local longitude, the moon and culminating stars on the meridian; both limbs at opposition and near conjunction.

2nd. The smaller planets on the meridian.

3rd. A catalogue of stars to the 8th magnitude inclusive, within 60° of the south pole.

Three hours of every suitable night will be given to this work, and the arrangement is such that the whole 60° may be examined and three observations made of each star within the proposed term of residence.

4th. Lunar occultations. Longitudes resulting from *culminations* as compared with *occultations*, have exhibited an *extraordinary* difference, to be accounted for perhaps by an error in the assumed semidiameter; this series of observations is considered necessary.

5th. It has been thought that useful information to terrestrial refractions will be obtained from observations in the two hemispheres on circum-zenith stars at each place of observation, and six stars have been selected which are near the zeniths of Talca and Washington to be observed on the meridian.

6th. Comets when discovered in the course of other observations, and at their periodic returns.

7th. Magnetical observations. The term-days of such observatories as continue to keep them has been set apart to obtain the three elements of the earth's magnetic condition, and on occasional term-days the observations would be made uninterruptedly during twenty-four hours with the declinometer.

8th. Meteorological observations at three stated hours (9 A.M., 3 P.M. and 9 P.M.) of each day; to embrace records of barometer; dry, wet, radiating and registering thermometers; rain-gauge; wind-vane and clouds. Hourly observation on equinoctial and solstitial term-days.

9th. Earthquakes, the registrations of a seismometer.

A meridian circle of 3 feet diameter, with a telescope of 52 lines aperture, has been ordered from Pistor and Martins; the Smithsonian Institution has just authorized me to obtain an equatorial of 6 (French) inches aperture, with clock motion, which they will lend me; in addition to which I have a 48 lines equatorial by Fraunhofer; these, with a clock and one or two portable instruments, comprise my astronomical equipment. In magnetism I am most especially desirous of your advice. Pray give me all possible information, and recommend such instruments, times and methods of observation as our limited grant from congress and the number of assistants will enable me to obtain and use as designated.

Such of the meteorological instruments as we do not possess will be ordered in a few days; but for a proper seismometer I know not where to go, the only account seen being in one of the earlier volumes of the British Association. The instrument is to be obtained at the expense of the Smithsonian Institution, and if you will do us the favour to confer with some of the members of your Association or of the Royal Society who have taken interest in the investigation of earthquakes, you will especially oblige Professor Henry and myself. The opportunity which my residence in Chili will offer to make accurate notes of these occurrences may perhaps be productive of useful results. I do not doubt that the instrument will be ordered the moment I hear from you.

Whilst I have asked your views especially on magnetism, I shall be grateful for counsel respecting any of the observations which are contemplated, or for suggestions of new series which the locality offers peculiar advantages for making. I have planned this expedition and embark in it with a desire to render the greatest possible amount of useful data to science; and you may be assured of hearty zeal in whatever yourself or any of the Fellows of the Royal Society may propose.

Believe me, dear Sir, very respectfully,

Your friend and servant,

S. M. GILLISS.

Lieut.-Colonel Edward Sabine, R.A., F.R.S. &c.